

Write the equation for the new function that is obtained from the given transformations on the parent function.

6. $f(x) = x^2$: vertical ~~stretch~~ ^{Shrink} of $\frac{1}{2}$, horizontal shift right 5, then a shift up 3

$$\frac{1}{2}f(x-5)+3 \quad \boxed{f(x) = \frac{1}{2}(x-5)^2 + 3}$$

7. $f(x) = \cos(x)$: reflect over y-axis, reflect over x-axis, vertical shift down 1

$$-f(-x)-1 \quad \boxed{f(x) = -\cos(-x)-1}$$

Determine whether the functions

Show algebraically if the equations are even, odd, or neither.

8. $f(x) = 4x^3 - 2x + 1$

$$f(-x) = 4(-x)^3 - 2(-x) + 1$$

$$= -4x^3 + 2x + 1$$

$$-f(x) = -4x^3 + 2x - 1$$

neither

9. $f(x) = -2x^5 + 3x^3 - x$

$$f(-x) = -2(-x)^5 + 3(-x)^3 - (-x)$$

$$= 2x^5 - 3x^3 + x$$

$$-f(x) = 2x^5 - 3x^3 + x$$

Same

odd

10. $f(x) = \sqrt[4]{2x^2 + 1}$

$$f(-x) = \sqrt[4]{2(-x)^2 + 1}$$

$$= \sqrt[4]{2x^2 + 1}$$

even

Find the average rate of change for each function on the specified interval. Show work!

11. $f(x) = x^2 - 5x + 2$ on $[-2, 4]$

$$f(-2) = (-2)^2 - 5(-2) + 2$$

$$= 4 + 10 + 2 = 16$$

$$f(4) = (4)^2 - 5(4) + 2$$

$$= 16 - 20 + 2 = -2$$

$$(-2, 16)(4, -2)$$

$$\frac{-2-16}{4-(-2)} = \frac{-18}{6}$$

$$= -3$$

12. $f(x) = \sqrt[3]{x+2}$ on $[-3, 6]$

$$f(-3) = \sqrt[3]{-3+2}$$

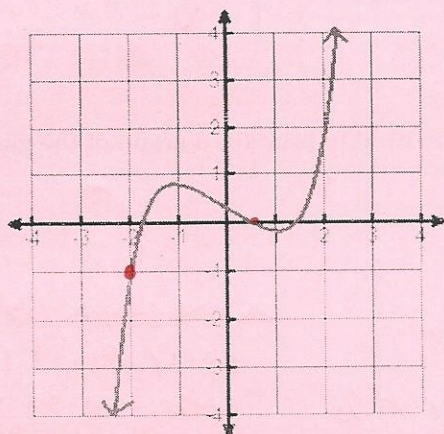
$$= \sqrt[3]{-1} = -1$$

$$f(6) = \sqrt[3]{6+2} = \sqrt[3]{8} = 2$$

$$(-3, -1)(6, 2)$$

$$\frac{2-(-1)}{6-(-3)} = \frac{3}{9} = \frac{1}{3}$$

13.



on $[-2, \frac{1}{2}]$

$$(-2, -1)$$

$$(\frac{1}{2}, 0)$$

$$\frac{0-(-1)}{\frac{1}{2}-(-2)} = \frac{1}{5/2} = \frac{2}{5}$$

14.

x	y
-10	1024
-7	128
-5	32
-1	2
0	1
1	$\frac{1}{2}$
3	$\frac{1}{8}$

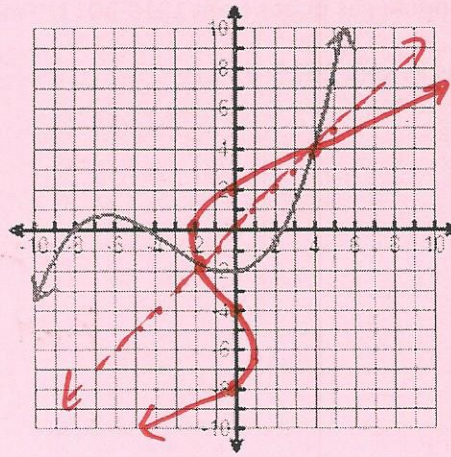
on $[-5, 1]$

$$(-5, 32)$$

$$(1, 1/2)$$

$$\frac{\frac{1}{2}-32}{1-(-5)} = \frac{-\frac{63}{2}}{6} = -\frac{21}{4}$$

20. Draw the inverse of the given graph.

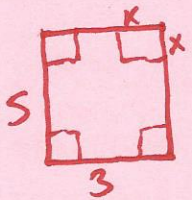


21. Write the inverse of the given table.

x	$f(x)$
.25	-6
8	3
0	14
-6.2	1.1
-8.6	-1.3
-11	17

x	$f^{-1}(x)$
-6	.25
3	8
14	0
1.1	-6.2
-1.3	-8.6
17	-11

22. ~~17~~ A square of side x meters is cut out of each corner of a 3 meter by 5 meter piece of cardboard to form a box. Determine the domain of the volume function in terms of x . Show work!



$$V(x) = Lwh$$

$$L = 5 - 2x$$

$$w = 3 - 2x$$

$$h = x$$

$$V(x) = x(5-2x)(3-2x)$$

$$D: (0, 1.5)$$

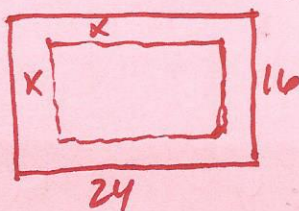
23. A football thrown in the air with initial velocity 50 ft/sec is modeled by $h(t) = -16t^2 + 50t + 4$. If the ball falls incomplete what is the real world domain for this model?

$$0 = -16t^2 + 50t + 4$$

graph find zero!

$$(0, 3.2031)$$

24. A hedge x feet wide is planted inside the borders of a garden with dimensions 16 feet by 24 feet. Determine the domain of the area function that describes the reduced garden in terms of x .



$$A(x) = Lw$$

$$L = 24 - 2x$$

$$w = 16 - 2x$$

$$A(x) = (24-2x)(16-2x)$$

$$(0, 8)$$